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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/591,443	06/09/2000	Jonathan P.R. Lacey	10991507-1	3254

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EXAMINER

KANG, JULIANA K

ART UNIT	PAPER NUMBER
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2874

DATE MAILED: 08/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/591,443

Applicant(s)

LACEY ET AL.

Examiner

Juliana K. Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 11, 12 and 15-18 is/are rejected.
- 7) ☒ Claim(s) 6-10, 13, 14 and 19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: .

## **DETAILED ACTION**

### ***Inventorship***

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

### ***Specification***

2. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. Correction of the following is required: the claimed subject matter in claim 14 is not disclosed in remainder of specification. The claims as filed in the original specification are part of the disclosure and therefore, applicant may amend the specification to include the claimed subject matter.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claim 14 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claim 14 recites the limitations "said optical path" and "said corresponding second optical path" in lines 1 and 2. There are insufficient antecedent bases for these limitations in the claim. There are three optical paths, input optical paths, drop signal paths, and add signal paths, recited in the independent claim 11 and its intervening claim 13. It is not clear to the Examiner which path "said optical path" and "said corresponding second optical path" are referring. Appropriate corrections are required.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. **Claims 1 and 16 are rejected under 35 U.S.C. 102(a) as being anticipated Sakata et al (JP 2000-032510).**

Regarding claim 1, Sakata et al disclose an add/drop multiplexing optical switch comprising: an array of side-by-side first optical paths (11, 12, 13); an array of side-by-side second optical paths (21, 22, 23), said first optical paths passing through said second optical paths at intersections; first and second ports (input and output ports of 1<sup>st</sup> group of waveguides 11, 12, 13) at opposite sides of at least some of said first optical

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paths for propagating optical signals to and from said first optical paths; third and fourth ports (input and output ports of 2<sup>nd</sup> group of waveguides 21, 22, 23) at opposite sides of at least some of said second optical paths for propagating light to and from said second optical paths; and a plurality of two-state switching arrangements (3) located at selected said intersections such that each said first optical path includes and is uniquely associated with a single one of said two-state switching arrangements, each said two-state switching arrangement having a transmissive state in which said first and second ports of said uniquely associated first optical path are coupled, each said two-state switching arrangement having a reflective state in which said first port of said uniquely associated first optical path is coupled to a particular said fourth port of a specific second optical path (see Figs 1-3).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakata et al.**

Regarding claim 11, Sakata et al disclose the claimed invention except a controller for individually switching each switching arrangement. Sakata et al teach switching arrangements (3) that are associated with its own optical paths/ports and

each switching arrangement is operated independent of each other. Thus, it would have been obvious to one with ordinary skill in the art to recognize a controller in Sakata et al to control each switching arrangement individually for either transmitting or reflecting the optical signals.

Regarding claim 15, Sakata et al show demultiplexing and multiplexing the optical signals (see Fig. 3).

**9. Claims 2-5, 12, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakata et al as applied to claim 1 above, and further in view of Fouquet et al (U.S. Patent 5,699,462, the reference submitted by applicant).**

Regarding claims 2, 12 and 18, as described above, Sakata et al disclose the claimed invention including the two-state switching wherein the input signal is either routed to an output port or a drop port. Even though it appears that Sakata et al's switches are "bubble switches," Sakata et al do not positively teach the specific types or the structure of the two-state switch. Fouquet et al teach a switching element (preferably used to form a matrix of switching elements, see column 5 lines 56-57) that is thermally actuated to displace liquid from a gap (trench) at the intersection of two waveguides to either transmit or reflect the light using bubbles. It would have been obvious to one with ordinary skill in the art at the time the invention was made to use Fouquet et al's switching element in Sakata et al in order to make the optical switch compact, to reduce cross-talk and to reduce the manufacturing cost (see column 6 lines 2-4).

Regarding claims 3 and 17, Sakata et al show input ports (bottom right side ports shown in Fig. 1), drop ports (top left side ports shown in Fig. 1), add ports (top right side ports shown in Fig. 1) and output ports (bottom left side ports shown in Fig. 1).

Regarding claim 4, Sakata et al switches are located at specific intersections to provide an add-drop switch in which each add port is uniquely associated with a different output port.

Regarding claim 5, Sakata et al show the equal number of the first optical paths and the second optical paths.

***Allowable Subject Matter***

10. Claims 6-10, 13, 14 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and when the applicant overcomes all the rejection applied to claim 14 as indicated above.

The Sakata et al reference does not teach or reasonably suggest the claimed switching arrangement of two trenches allocated along each first optical path (the path that the input goes through the trenches without reflection) and wherein two trenches are in the same operative states (reflective or transmissive states) at the same time. Applicant's switching arrangement of a pair of trenches cause optically aligned input and output ports to be coupled during transmissive state, while the pair of trenches cause operatively associated input and drop ports to be coupled and causes operatively associated add and output ports to be coupled.

***Conclusion***

11. The prior art documents submitted by applicant have been considered and made of record (note the attached copy of form PTO-1449).

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. O'Rourke et al (U.S. Patent 6,396,972 B1) teach optical switching arrangement wherein trenches are formed at every intersection of the waveguides. Sato (JP 8-62645) teaches a thermally controlled optical switch formed of slits and liquid. Inagaki et al (JP 11-202373) teach optical switching arrangement using the index matching liquid.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliana K. Kang whose telephone number is (703) 305-6259. The examiner can normally be reached on Mondays and Thursday 7:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rod Bovernick can be reached on (703) 308-4819. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-3072.

  
HEMANG SANGHAVI  
PRIMARY EXAMINER



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Juliana Kang  
August 7, 2003